

What is claimed is:

1. A curable organopolysiloxane composition having selective adhesion to a substrate, said polymer system containing the following components:

- 5 (A) an organopolysiloxane polymer;
- (B) an organohydrogenpolysiloxane crosslinker;
- 10 (C) a platinum group metal catalyst;
- (D) a cure inhibitor;
- (E) an adhesion promoter;
- 15 (F) an epoxy functional compound; and
- (G) a compound selected from the group consisting of soluble polydiorganosiloxanes, polycycloorganosiloxanes, glycols, and mixtures thereof.

20 2. The composition according to claim 1, where the organopolysiloxane polymer contains at least two silicon-bonded lower alkenyl groups in each molecule and is a straight chain organopolysiloxane polymer having a viscosity of about 10,000 to about 10,000,000 centipoises at 25°C or mixtures of such organopolysiloxanes and the lower alkenyl groups are vinyl.

25 3. The composition according to claim 1, where the organohydrogenpolysiloxane crosslinker has organic substituents bonded to silicon atoms which are methyl, and the concentration of organohydrogenpolysiloxane provides 0.2 to 2 silicon-bonded hydrogen atoms for each silicon-bonded alkenyl radical in the organopolysiloxane, and wherein the crosslinker has the formula:



wherein each R is independently chosen from a hydrogen or monovalent hydrocarbon radical free of aliphatic unsaturation containing 1 to about 8 carbon atoms, and x varies so that the crosslinker has a viscosity ranging from about 80 to 1,000 centipoises at 25°C.

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- 4 The composition according to claim 1, where the platinum group metal catalyst is selected from the group consisting of platinum metal, platinum compounds, platinum complexes and mixtures thereof.
- 5 5. The composition according to claim 1, where the platinum group metal catalyst is chloroplatinic acid complexed with a liquid olefin or an organosiloxane containing ethylenically unsaturated hydrocarbon radicals bonded to silicon.
- 10 6. The composition according to claim 1, where the platinum group metal catalyst is a neutralized complex of chloroplatinic acid or platinum dichloride with sym-divinyltetramethyldisiloxane.
- 15 7. The composition according to claim 1, where the platinum group metal containing catalyst provides about 0.1 to 500 parts by weight platinum group metal per million parts of the combined weights of organopolysiloxane and organohydrogenpolysiloxane.
- 20 8. The composition according to claim 1, where the platinum group metal containing catalyst provides about 1 to 50 parts by weight platinum group metal per million parts of the combined weights of organopolysiloxane and organohydrogenpolysiloxane.
- 25 9. The composition according to claim 1, where the epoxy-functional compound is glycidoxypropyltrimethoxysilane.
- 30 10. The composition according to claim 1, where the epoxy-functional compound comprises about 0.01 to 30 parts by weight per 100 weight parts of the organopolysiloxane polymer.
- 35 11. The composition according to claim 1 further comprising an alkoxysilane.
- 40 12. The composition according to claim 1 further comprising a filler selected from the group consisting of fumed silica, treated fumed silica, precipitated silica, treated precipitated silica, fused silica, and finely divided quartz and mixtures thereof.
13. A composite having bonded thereto a cured organopolysiloxane composition according to claim 1:

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14. The composition of claim 1 comprising:
- (A) up to 100 parts by weight of an organopolysiloxane polymer having a viscosity of about 10,000 to about 10,000,000 centipoises at 25°C with sufficient vinyl, or mixtures of such organopolysiloxane to provide functional reactivity with crosslinker organohydrogenpolysiloxane;
  - (B) from 0.3 to 40 parts by weight of an organohydrogenpolysiloxane crosslinker containing at least two silicon-bonded hydrogens per molecule;
  - (C) a catalytically effective amount of a platinum group metal catalyst;
  - (D) from 0.01 to 3 parts by weight of a cure inhibitor of the type 4 or 5, ethyl cyclohexan-1-ol;
  - (E) from 0.01 to 30 parts by weight of a compound comprising at least one hydroxy group and in the same molecule at least one substituent selected from a group consisting of silicon hydride, alkenyl, and acryl;
  - (F) from 0.01 to 30 parts by weight of an epoxy functional compound; and
  - (G) up to about 10 parts by weight based upon the polymer system of a mold release agent that is selected from the group consisting of soluble fluid polydiorganosiloxanes, polycycloorganosiloxanes (linear and cyclic), hydroxy end blocked hydrocarbons and having a molecular distribution such that the viscosity is 50 to 10,000 centipoises at 25°C.
15. The composite according to claim 13, wherein the composite comprises a resin.
16. The composite according to claim 15, wherein the resin is PBT or PBA.
17. A composite comprising an epoxy-coated substrate having bonded thereto a cured organopolysiloxane composition according to claim 1.
18. The composite of claim 17, where the substrate is metal.
19. The composition of claim 1 further comprising a silicone soluble in the

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composition wherein the silicone is less soluble in the composition when the curable composition has been cured whereby the silicone bleeds out of the cured composition, wherein the silicone is selected from the group consisting of:

(A) phenyl containing siloxanes such as copolymers of diphenylsiloxane with diorganosiloxanes and copolymers of methylphenylsiloxane with diorganosiloxanes, polydimethylsiloxanes, having a viscosity ranging between 10 to about 10,000 centipoises at 25°C., preferably ranging from about 100 to about 1000 centipoises at 25°C; and

(B) fluorosiloxanes such as silicones containing trifluoropropyl substituted siloxanes, having a viscosity ranging between 10 to about 10,000 centipoises at 25°C, preferably ranging from about 100 to about 1000 centipoises at 25°C; and mixtures thereof.

20. An additive composition for increasing the selective adhesion of an elastomer to a resin but not to a metal, comprising a mixture of an epoxy functional compound and a compound selected from the group consisting of polydiorganosiloxanes, polycycloorganosiloxanes and mixtures thereof.

21. An article of manufacture comprising:

a metal mold;  
a thermoplastic substrate; and  
a molding composition, wherein the molding composition selectively adheres to the thermoplastic.

22. The article of manufacture according to claim 21, wherein the composition adheres to the substrate at least 50% more than to the metal mold.

23. A method of molding comprising the steps of

providing a metal mold for an article to be molded;

associating with the mold a thermoplastic substrate;

adding a curable composition to the mold in contact with the

metal mold and the substrate;

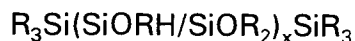
curing the composition; and

5 removing from the mold the cured composition having affixed thereto the substrate in a manner whereby less than half of the force necessary to remove the cured composition from the thermoplastic is necessary to remove the cured composition from the metal mold.

10 ~~24. The composition of claim 14 wherein there is from 0.1 to 10 parts by weight of the crosslinker.~~

15 ~~25. The composition of claim 15 wherein there is from 0.01 to 10 parts by weight of the epoxy functional adhesion compound.~~

20 ~~26. The composition of claim 14 wherein the polydiorganosiloxane is of the formula:~~



25 ~~Wherein each R is independently chosen from methyl, ethyl, vinyl, hydroxy, propyl, and 3,3,3-trifluoropropyl, and/or a branch chain of polydiorganosiloxane group and is itself a straight chain, and where x is given to create a viscosity of 10,000 to 10,000,000 centipoises at 25°C.~~

30 ~~27. The composition of claim 1 wherein the cure inhibitor is an acetylene alcohol derivative such as ethenylcyclohexanol or pyradien alcohol having the following formula:~~



35 ~~where R' is a alkyne saturated hydrocarbon chain, branched or unbranched, and R is a saturated hydrocarbon linear or cyclic with hydroxy groups pendant or end blocked with hydroxy saturation indicated by x.~~

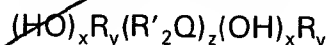
40 ~~28. The composition of claim 1 wherein the epoxy functional compound is of the formula:~~



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where RO refers to a saturated linear alkoxy group and R' is an alkane, substituted or unsubstituted, H is hydrogen, hydroxy or halogen with  $x + y + z = 3$ , and R'' is an oxirynic derivative containing 6-15 carbon atoms.

29. The composition of claim 1 wherein the adhesion promoter is a hydroxinated silicone compound is of the formula:



Where  $x + y = 3$ , and x may equal 1, 2, or 3. R is any hydrocarbon alkyl or alkenyl radical linear or branched comprising not more than 10 carbon atoms. R' is any mixture of any alkyl, alkenyl, aliphatic, or aromatic radical, linear or branched, up to 12 carbon atoms, and where z is of sufficient number to create a viscosity of 50 to 10,000 centipoises at 25°C.

30. The composition of claim 1 wherein the epoxy-functional compound is glycidoxypolytrimethoxysilane.